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FEBRUARY 18TH, 1862.

JOHN CRAWFURD, Esq., President, in the Chair.

The following presents were announced:—The publications of the Hungarian Academy of Sciences, forming eight volumes in 4to, thirty volumes in 8vo, ten parts in 4to, and ten parts in 8vo (presented by the Academy). —The Journal of the Asiatic Society of Bengal, No. III, 1861 (by the Society).—The Photographic Journal.—The Athenæum.—The Literary Gazette.—The Journal of the Society of Arts.—The London Review.

The following new Fellows were announced:—His Grace the Duke of Devonshire; the Lord Viscount Strangford; Sir Erskine Perry; Major Charles Lionel Showers; James Graham Clunchen, Esq.; Spencer St. John, Esq., H.M. Consul-General at Hayti; Charles A. Atkin, Esq.

VI.—*On the Numerals as Evidence of the Progress of Civilization.* By JOHN CRAWFURD, Esq.

NUMERAL terms being, as Adam Smith justly expresses it, "among the most abstract ideas which the human mind is capable of forming", they must, necessarily, have been among the last invented words of every independent and original language. Long, therefore, after words or modifications of words indispensable to the structure of language, however abstract in their nature, such as prepositions and auxiliaries, had been completed, numerals either did not exist at all, or must have existed in a rude and imperfect, or, so to speak, in a mere embryo state. Such is still found to be their condition among all rude people: they advance with the progress of civilization, and are perfected only with the most advanced people.

The social condition of a people is, therefore, in a good measure indicated by its numeral system; and, taking this as a test of civilization, I proceed to apply it to the different races of the human family. I begin with the people among whom the numerals appear to be in the rudest form. These are the Australians, the same race of man throughout, divided, like the Red Man of America and the Negro of Africa, into innumerable independent tribes, and, like them, each tribe speaking its own separate and independent tongue. I have examined the numerals of thirty Australian languages, of every discovered part of the huge continent, and in no instance do they appear to go beyond the number four. They have, in fact, not reached the point of counting their own fingers, even those of one hand. In some of these languages the terms are restricted to two. The Australian scale is the binal in its first and nudest state. In the first volume of the *Transactions of the Geographical Society*, there is an excellent account of the Australians of King George's Sound, by Mr. Scott Nind, to which a vocabulary is annexed, containing the numerals, which are made to reach the number five. The term for this last unit, however, turns out to be only the word "many". In the numerals of one of the islands off Cape York in Torres Straits, given by Professor Jukes, they appear to reach to six; but when the higher terms are examined, they will be found to be composed of the two first. In some of the Australian tongues they are confined to the two first only, while in others three and four are mere combinations or repetitions of them, as two-one for three, and two-two for four. Further than four, then, no Australian language goes; and beyond this the invariable practice is to use words equivalent to "much" or "many", in the same manner in which the early Greeks used the word "myriad" after reckoning as far as a thousand; an illustration which I borrow, as I shall do several other valuable illustrations in the course of this paper, from the truly learned and philosophical *Treatise on Arithmetic* of the late Dr. Peacock, Dean of Ely. It may be observed, as an additional proof of the rudeness of the Australian numerals, that cardinals alone exist in all the languages of Australia, ordinals being wholly wanting. It is remarkable that, with such poverty of numerals, the Australian languages should, in their structure, be more complex than any of the more modern languages of Europe.

I shall take for my next example the numeral systems of the Americans—the same race of man from Terra del Fuego to the confines of the Esquimaux; or, at least, differing no more among themselves than do the Negros of Africa, the Chinese, the Hindus, or the Hindu-Chinese. Although of a single race, the Red Man is composed of numerous distinct tribes, speaking different tongues, which agree with each other in no respect but one, a general accord in grammatical structure—a structure differing from that of the languages of all other races. Humboldt, speaking of Mexico—that portion of the New World which, from physical geography and accessories, was most favourable to the development of civilization, and in which the highest advance actually took place—observes that, although the Mexican or Aztec tongue extended over a length of four hundred leagues,—the effect of long subjugation by the nation of whom it was the speech,—yet that there existed within the Mexican territory no fewer than twenty other languages, wholly different from it and from each other—as different, in fact, as is French from German or from Polish. The different tongues of the American continent, he observes, may be stated, "without the least exaggeration, to amount to several hundreds"; while some authors have, indeed, reckoned them to be not fewer than two thousand. The American numerals, of course, partake of this diversity, each tongue having terms peculiar to itself; for the American languages afford very few examples of numeral terms borrowed by one language from another, and in the few in which this occurs the terms are confined to the higher numbers, indicating a recent adoption.

The quinary and denary scale of numeration, or the counting by the fingers of one or of both hands, appears to have prevailed over the whole American continent and its islands; and we are led to conclude from this fact that none of the tribes of America were so low in the scale of civilization as those of Australia. Sir John Richardson, in his boat-voyage, gives us the numerals of two North American tribes. One of these, the "Mauvais monde", or Dog-rib tribe, count only as far as ten, and with them, as with some Malayan nations, the numeral "five" is represented by the word for the hand; from which we may, probably. be led to infer that a time was when that numeral was the limit of their scale.

The Sieux or Dakota tribe, a more numerous, powerful, and advanced one than the Dog-rib, have a numeral scale which extends to a million, which term is designated "the great count". Twenty or a score is formed by affixing a word to the number ten, which would seem to imply the great ten. For a hundred there is a specific term; but that for a thousand is, like that for twenty, formed by affixing to this term a word signifying the great hundred. This is a proceeding exactly analogous to the formation of our term for a million, which is known to be derived from the Italian word *millione*, or great thousand.

Humboldt, in his Essay on New Spain, gives us the numerals of a language which, although it had once a wide currency, is now nearly extinct. This is called the Muysca, and has numeral terms extending to a hundred. The digits have specific names; but the intermediate numbers between ten and twenty are formed by prefixing to the first nine digits the word "foot", from which he concludes that, in the formation of the scale, the framers, after exhausting their ten fingers, had recourse to the foot. The word "foot" standing alone is the term for twenty or a score, which Humboldt tells us plays an important part in the numeral scale of the American nations. The word "house", however, is also used for the score, and the term for "hundred" literally signifies "five houses".

The Mexicans and Peruvians were the only people of the New World who had attained a large measure of civilization, although it was greatly below that of second and third-rate nations of Asia. Their numeral scale corresponded—that of the Peruvians, for example, extending to a million. But although such high numbers existed in the languages of the Peruvians and Mexicans, the common people rarely ever reckoned beyond five. The existence of such high terms among a people so rude has excited surprise, when it is remembered that the cultivated Greeks and Romans counted no further than a thousand. The explanation seems to be, that the higher numbers were probably the invention of a class who had leisure to attend to such studies as astronomy, or rather astrology, and that a knowledge of them never extended beyond those parties. Such is certainly the case with the Hindus, a far more advanced people than Mexicans or Peruvians. Their terms extend to a billion; the higher ones, however, being known only to the Bramins, while the masses rarely count beyond one hundred thousand, the well-known "lac", correctly laksha.

The only race found in America and its islands, except the Red Man, was the Esquimaux; and they, as they had their own peculiar language, had also their special numerals. They counted as far as seven; but the terms for the six and seven were formed, as with some other rude people, by the addition of one and two respectively to the digits of one hand: for any higher numbers, like the Australians, they use the adjectives "many" or "much". I make this statement on the personal authority of my friend the late Sir James Ross. By the test of the numerals, then, the Esquimaux were a more advanced people than the Australians, notwithstanding the rigour of their climate; and, indeed, the progress which they had made in the arts proves that such is really the case.

I come next to the numerals of Africa, a quarter of the world which, unlike Australia and America, contains several races of man. I begin with the most numerous of these, the true Negro, a people who, although equal in physical strength, capacity of enduring toil, and long in possession of those important accessories to civilization, cultivated plants and animals amenable to domestication, have never invented any form of writing, and hardly ever reached that degree of civilization which the Red Man had attained on the plateau of the Andes.

The languages of Negro Africa are as diverse as those of Australia and America; and they exhibit evidence of great rudeness even in structure, for they are said to be destitute of participles, prepositions, and adverbs. Their numerals correspond with this diversity and this rudeness; for each separate tongue has its own peculiar ones, and it is seldom that even neighbouring tribes have borrowed them from one another, so that the range of a single system is always very narrow,—unlike what prevails in some other parts of the world.

I have examined the numerals of above seventy of the Negro languages. The denary scale prevails through all of them, with the occasional use of the vicenary: in this respect, therefore, they show a great superiority over the Australian numerals. The highest Negro civilization has been attained, not on the coasts, but in the interior of the continent, probably owing to a more auspicious physical geography, and, perhaps, in some measure also to the influence and example of the Arabs, now exercised for above twelve centuries. Within the kingdom of Bornou there are spoken no fewer than ten different languages, each one of these with its own numerals: one tribe counts as far as a hundred, and another even as far as a thousand. We find in these tongues evidence of a vicenary scale, the term for that sum being a specific one, and not formed by composition.

These last named numerals are, however, exceptions; for the systems of most tribes do not extend beyond five, or the counting of the fingers of one hand; while in others, which reach to ten, the intermediate numbers are formed by a combination of the lower digits with five—as five and one for six, and five and four for nine—the same process as that pursued by the Australians, the Esquimaux, and, as will afterwards be shewn, by some of the rudest Malayan tribes. In this case the scale is really quinal, the intermediate numbers between five and ten being formed in the same manner as are those between ten and twenty in more cultivated languages.

Between the Negro and the Caffre, there exists in Southern Africa and within the tropic a distinct race, which my friend Francis Galton calls Negroid. To judge by its numerals, it is certainly in point of advancement no improvement on the true Negro. Mr. Galton's graphic account of their numeral ignorance would seem to place them, in this respect, almost on a footing with the Australians. In describing the Damara tribe, he says of them:—"When inquiries are made about how many days' journey off a place may be, their ignorance of all numeral ideas is very annoying. In practice, whatever they may possess in their language, they certainly use no numeral greater than three. When they wish to express four, they take to their fingers, which are to them as formidable instruments of calculation as a sliding rule to an English school-boy. They puzzle much after five, because no spare hand remains to grasp and secure the fingers that are required for units. Yet, they seldom lose oxen: the way in which they discover the loss of one is not by the number of the herd being diminished, but by the absence of a face they know." The same people, Mr. Galton adds, have specific terms for every variety of colour which the domestic ox assumes, and they are many. Like the language of all rude people, theirs abounds in terms expressive of concrete ideas, and is eminently deficient in those expressing abstract ones.

The Hottentots are a race not only different from every other of Africa, but from all mankind by certain peculiarities of physical form. Their very language differs widely from the languages of all other people by a peculiar cluck in its pronunciation. They seem to have numeral terms extending to five, or as far as the five fingers of one hand will guide them. "I know not," says Sir John Barrow, "how far the numerals in their language extend, but none of our party could tell beyond five, nor could any of them put two numbers together but by the assistance of their fingers." In short, in their powers of numeration, the Hottentots do not appear to be in a more advanced state than the Negroid Damara of Mr. Galton.

The Caffres, the neighbours of the Hottentots, and like them immemorially in possession of the sheep and ox, but physically a very superior race to them, possess numerals extending to one hundred—clear evidence of a superior civilization. But the people whom we designate Caffres, meaning in Arabic "infidels," a word which we have borrowed from the Mahomedans, extend over the seven parallels of Southern Africa, lying between the twenty-sixth and thirty-third degrees of south latitude; and they embrace many tribes speaking different languages with different numerals, of which I have been enabled to refer to a single specimen only.

On the eastern side of Africa, from the equator to the tenth degree of north latitude, we find Negro tribes who have made a greater advance in society than those of the western coast, to judge by the absence of the cannibalism and human sacrifices of the latter. The principal of these tribes are the Galla, the Hurrur, the Dannakil, the Arkiko, and the Shiko, and all these have distinct languages and distinct numeral systems, with terms usually extending to one thousand. With the exception of this last term, which is a foreign one, the rest seem, in every case, to be indigenous.

The Nubians and Abyssinians exhibit a race far more highly endowed than Negros, Caffres, or Hottentots, as evinced in their immemorial possession of indigenous letters. The numeral system of the language of Darfur, extends to one thousand, that of the Tigré to ten thousand, and that of the Amharri to one million. All the terms seem native in each language with the exception of the highest number, which is expressed by the word Alf, which seems to be either Arabic or Hebrew. This term appears to have been applied in each language to the highest number, except in the single instance of the Amharri, which has a distinct term for a million, namely, Ilf; probably, however, only a corruption from Alf with a new application. In the Darfur, and, indeed, in some of the Negro languages just spoken of, Ilif represents one thousand, their highest number, while in Tigré, and Amharri, it is the term for ten thousand.

In these Nubian tongues there is a peculiarity worth notice.

Their integer numbers, from twenty to ninety inclusive, are expressed by specific terms and not by words composed of elements, as is the case in most other languages.

Egypt, now inhabited by a very mixed people, had anciently a race peculiar to itself, more Asiatic in character than African, and which, favoured by the Nile, that at once manured and irrigated its soil, had attained at a very early time a high measure of civilization, attested by the invention of letters both symbolic and phonetic. This civilization is further proved by a numeral system which embraced terms extending to a million.

On the African shore of the Mediterranean—now for the most part occupied by a mixed population, the result of many conquests—there existed, two thousand years ago, an aboriginal and peculiar race far superior to any negro one, and indeed, in character, more European than African. This race, the Mauritanian, favoured by fertility of soil and geniality of climate, had made a very considerable progress in civilization, indicated, among other evidences, by the invention of letters.

Asia is but a vague geographical expression, for we cannot tell where it begins from the west or ends to the south. For the present discussion, however, I shall consider it in its popular acceptation, leaving the Malayan, the Philippine, and the Polynesian Islands for separate consideration.

Asia contains a far greater variety of races than any other portion of the globe, and a far greater variety also of social conditions. The variety of its languages is also great, and the varieties frequently constitute different and distinct tongues, and even this within the same race, just as we find to be the case in Australia, Africa, and America. The numerals, as usual, correspond in variety with the languages, but here we find what does not exist at all in Australia, and to but a very partial degree in America and Africa, the wide currency among distant and distinct races, tribes, and nations of essentially the same numeral system, the result of wide-spread conquests, settlements, and other forms of intermixture which could not have taken place among the rude, impotent, and unenterprising inhabitants of Australia, America, and Africa.

In this vast field there is room only for a selection of examples, and I begin with some of the lowest forms of civilization. In the numerals of the languages of Kamschatka and the Kurile Islands, which, in their terms, are wholly different from each other, the system extends only to the ten fingers. There is even internal evidence of its having been once binal, for the simple terms are confined to the numbers one, two, and ten, the intermediate numbers from two to the decimal being formed, either by adding the two first numerals, or deducting them from ten. Thus, one and two stand for three, and two from ten for eight. This rudeness in numeration corresponds faithfully with the very rude condition of the people—dirty, fur-clad fishermen.

The Oedd-Ostiacks, a Siberian people, are far more advanced, and have numbers extending to a thousand. They have special terms for five and for ten, but the terms between these numbers are formed by adding to the number five or subtracting from the number ten, the numerals below four, as for nine, either five and four, or ten less one. This is a rude recourse, but still some advance on the numerals of Kamschatka and the Kurile Islands. In this Siberian tongue, there exists specific terms, not formed by composition, for all the even numbers, from twenty to a hundred inclusive. A thousand is only expressed by "ten hundreds."

The language of the Manchus, or present possessors of the Government of China, has a numeral system extending to one thousand. The digits here are specific terms, and, as is the case with the Siberian tongue just referred to, such also is the case with the even numbers from twenty to ninety inclusive.

The numerals of the Mongol language, that of Jengiz Khan and his countrymen, and most probably also that of Attila and his Huns, differ wholly in their terms, as do the language to which they belong, from those of the Manchus, although the two people who speak them be of one and the same race of man. The Mongols reckon up to a thousand, and, like the other Tartar tribes just named, have specific simple terms for the even numbers from a score to ninety. We have in this case the first example which has occurred of a language and numerals of wide geographical extension, for the Mongol numerals prevail with little variation from the Wall of China to the Caspian and the Volga, over sixty degrees of longitude. This great diffusion can only be ascribed to the physical geography of the region in question and to the immemorial possession by its inhabitants of the ox, the horse, and the sheep, with the nomadic and conquering habits engendered by this peculiarity of condition.

From the eastern borders of Bengal to the western of China, there exist many nations or tribes of the same race, speaking each its own indigenous language, and, except in the few examples of foreign words, all are monosyllabic. I have examined thirteen of the numerals of these tongues, and they are as different as the languages to which they belong. All have numeral terms reaching to a thousand; and the Burmese and Siamese languages possess native terms which extend to ten millions. Among the nations of the race in question who have adopted the religion of Buddha, the Pali—a derivative of the Sanskrit, as Italian is of Latin—exists as a sacred tongue, but its numerals have in no case superseded the native ones as the Sanskrit numerals have done with those of the languages of Northern and Central India.

The Chinese, by far the most civilised of all the people speaking monosyllabic languages, have their own system of numerals. This system is strictly decimal; and besides specific names for lower numbers, they have them for ten thousand, for one hundred thousand, for a million, for ten millions, and up to one thousand millions. None of their numeral terms, however, have, as has been the case with the Sanskrit, been extended to neighbouring nations.

The polysyllabic language of Japan has a numeral system entirely its own, extending to ten myriads or one hundred thousand. But besides the general system, it has specific numerals appropriate to a great many classes of objects; as, for example, one for human beings; one for animals that do not fly or swim; one for birds; one for ships and boats; one for objects characterised by length, as trees, sticks, radishes, carrots, candles, tobacco-pipes, and human fingers: one for flat objects, as planks, paper screens, plates, and trays, but not mats, which have their own peculiar ones; one for textile fabrics; one for farinaceous roots; one for hats, umbrellas, and parasols; one for inanimate objects with four legs, as tables and chairs; one for patent, and one for sealed letters. There is no end of the caprices of languages; Sir Rutherford Alcock in his grammar enumerates fourteen of these classes, without by any means exhausting the stock.

Hindustan, with its great dead recondite tongue, the Sanskrit, and, to say nothing of the languages of rude tribes, its ten tongues of as many civilized and lettered nations, offers the most remarkable example of a widely diffused system of numerals. This is the Sanskrit system, which is found not only in the greater number of the languages of India itself, but has reached the Persian, and even to some extent the ancient and modern languages of Europe.

The Sanskrit numeral system counts up to trillions, having specific terms for ten thousand, for one hundred thousand, for a million, for ten millions, and for all the higher decimal integers. The people who invented this, invented also the system of notation by local value, perhaps the greatest benefit which the Hindus have conferred on civilization. From them the Persians and Arabs acquired it, it is thought, as late, at the earliest, as the ninth century, or three centuries after the adoption by the latter of the Mahomedan religion. The Arabs carried it with them to Spain, from whence it reached the civilized nations of Europe in the thirteenth century, becoming general among them, however, only after the invention of printing. The Arabs then, had been in possession of the Indian notation for four centuries before Europeans adopted it, although all this time these Arabs were their neighbours on European soil. It appears that the most backward of all the European nations, the Russians, although they have since made a great stride, did not adopt it until Peter the Great, in his savage way of inaugurating civilization, forced it upon them in the beginning of the last century.

That the Hindus were the discoverers of this useful invention, long erroneously attributed by us to the Arabs, there can be no doubt. The precise time, however, when it began to supplant their notation by letters of the alphabet and by symbolic words, has not been ascertained. By a stone inscription, however, we are enabled to carry the invention back to so early a date as 144 years before Christ, and it may be added that the Arabs themselves call it the Hindu notation. I take this on the authority of an accomplished orientalist, my friend Mr. Edward Thomas. The Hindus carried it along with their religion to Java, where it is found on inscriptions on stone, bronze, and copper. A bronze vase, for example, in my own possession, having the signs of the Hindoo zodiac, bears, in figures, the date 1234 of the era of Salivana or Saka, which corresponds with 1315 of Christ—a period which preceded the introduction of the Mahomedan religion into the island by 166 years.

But the Sanskrit numerals are far from being universal even within India itself. Four of the principal civilized nations of Southern India, known as the Dravidian—namely, the Telugu, the Kanara, the Tamil, and Malayalam, embracing, at present, a population of above thirty millions, have not adopted them as have done all the nations of Northern India. These, although they speak distinct tongues, have essentially the same numerals, to all appearance indigenous, and probably originating with the most civilized and powerful of them, so that we have here another example of a numeral system of considerable diffusion. The native terms in this case reach only to one thousand, above which the Sanskrit ones are adopted. The inference to be drawn from the existence of native numerals among the Dravidian nations is, that these people must have attained a very considerable measure of civilization before they adopted the Hinduism of the north, and hence stood in no need of foreign ones.

While the Sanskrit numerals have been rejected by the civilized nations of Southern India, it is remarkable that they have been adopted by the ruder people of Ceylon, probably introduced along with the Buddhist religion and through the medium of the Pali language, and probably when the Cingalese were in a very low state of society.

As already stated, the Sanskrit numerals have not been adopted by any of the nations east of Hindustan; nor have they been accepted by the neighbours of the Hindus to the north of them, for the numerals of Tibet are entirely different, and have every appearance of being local and indigenous.

I shall next take a glance at the numerals of the vast insular region which comprehends the Malayan and Philippine Archipelagos with the Polynesian Islands of the North and South Pacific. There exists among several distinct races and in innumerable languages of this wide quarter of the globe one numeral system, even more widely spread than the Sanskrit itself, for it prevails from the Sandwich to the New Zealand Islands, and from Easter Island to Sumatra, over 1300 leagues of latitude and 3000 of longitude. But this is not all, for it has reached, in an unquestionable form, the African island of Madagascar, a thousand leagues distant from Sumatra, the nearest point from which it could have been transmitted.

It is totally impossible, from record, from tradition, or from internal evidence, to decide with what nation this system originated. Everywhere there is more or less diversity in its terms, arising from difference of phonetic character in the languages which have adopted it, and from its having been for the most part transmitted orally and not by writing. We may conjecture however, that it must have been invented by a people who had made an early and considerable progress in civilization, for such people alone could have had the power and enterprise to have given it the wide diffusion which it has received, and this, too, in a state of much maturity. These people were, probably, either the Malays or Javanese, by far the most advanced nations of the region concerned, and hence those to whom its invention is most reasonably to be ascribed. I have united the two people because the terms found in other tongues are sometimes to be traced to the Malay, and as often to the Javanese; but, with few exceptions, the whole of them can be traced to the one language or the other.

The system is decimal, and its native terms extend to a thousand. In some of the languages of the Malay Archipelago, including the Bali, a written and cultivated tongue, the term for five is the same as that for the hand, but with this single exception, the names for the numerals are not traceable.

Among a few of the tribes which have adopted the system which, in the absence of any proper specific one, may be called the Malayan, we find traces of the existence of a binal scale, like that of the Australians, generally superseded by the usual denary. Thus, in several of the languages in question, the numbers below five, and more especially the numbers one and two, are peculiar to each tongue, while the general system begins only with five. Such is the case with those of the pigmy negros of the Malay Peninsula, whose native numerals are limited to the two first, the rest being taken from the Malayan. In the Papuan language of Doree, in New Guinea, the first four numerals are expressed by native terms and the general system begins with five. In the Kisa language, that of a small group of islands lying between Timur and New Guinea, the people who speak it being of the Malayan race, the terms for one, for four, and for eight are native, while the rest are Malayan.

The course followed in the displacing of native numerals by the more perfect Malayan scale is shown by the numerals of several languages, even in the heart of the Malayan Archipelago itself, which we may fairly consider as the seat of the original invention. Thus, in the Endé language, one of those of the Island of Flores, instead of the usual terms for six and for seven, we have "five and one" and "five and two," while eight is expressed by "two fours." There are, however, two languages within the Archipelago which have preserved their own native terms to a much greater extent. These are, the language of Ternate, one of the Moluccas, and of the Tambora, a language of the Island of Sumbawa. The first reckons in indigenous terms as far as ten only, but the last as far as a hundred.

In some of the Malayan languages we find, as, indeed, in most other tongues that have made any considerable progress, evidence of a vicenary system. Thus the Malay and Javanese have a term for "a score," confined, however, to the numbers between twenty and thirty. Thus, by annexing the digits to the usual numbers, "two tens and one" may be said, or prefixing them to the term in question, "one and a score" may be said with equal propriety.

It is only in the more polished languages that the Malayan numeral system extends to a thousand, for in the less cultivated its limit is usually a hundred. There are exceptions, however, and then the term for "thousand" is native, and not the usual Malayan. Such is the case in the Polynesian dialects, which, although generally following the Malayan numeration as nearly as could be expected, considering the very different phonetic character of the Polynesian and Malayan tongues, have native terms for a thousand.

Beyond a thousand the Malay system has borrowed from the Sanskrit, each Sanskrit numeral, however, representing one degree lower than in the parent scale, an error which pervades all the more considerable languages. Thus, the one hundred thousand of the Sanskrit is but ten thousand. The Javanese language alone has adopted the Indian numeral terms up to a billion. In this tongue, too, but only in the recondite dialect of it, we have the Sanskrit numerals throughout, including digits, hundreds, and thousands, and this, too, in form, with as much completeness as was compatible with the Javanese alphabet, perfect for its own purpose, but inadequate to the correct expression of Sanskrit sounds. This fact shows that, like the Pali numerals of the Burmese and

Siamese, they were introduced through writing and not by oral communication, as must have been generally the case in the dissemination of the Malayan system.

The wide dissemination of the Malayan numeral system is evidently to be attributed to the peculiar physical geography of the region in which it prevails. Its insularity allowed of its comparatively easy diffusion step by step, while the presence of the monsoons enabled rude navigators to perform voyages of such length as would be impossible where variable winds prevailed.

But there is a singular exception to the wide dispersion of the Malayan numerals. The inhabitants of the Nicobar Islands, although apparently of the Malayan race, and but a very short distance from Sumatra, the chief seat of the Malay nation, have not adopted the Malayan numerals, but have their own native ones, bearing them no resemblance. Their reckoning extends only to forty, or two score, and one hundred is expressed only by "ten tens."

From the Andaman Islands north to New Caledonia south, and from the Malay peninsula to the west, as far east as the Fejee Islands, far in the Pacific, there exist many negro tribes, apparently distinct from each other, and certainly speaking wholly different languages. Of the numerals of these races we have very little knowledge, but some of them within reach of the Malayan nations have partially, and with much corruption, adopted the Malayan system, as will be seen in the tabular statement annexed to this paper.

Returning from the great insular oceanic region to the Continent of Asia, we find, west of India, one of the most ancient and highest civilizations of the East, that of the Persians. The numeral system of the Persians reckons, even to the present day, no further than a thousand. Up to a hundred, the terms are substantially the same as those of the Sanskrit, and this, indeed, is no more than was to be looked for if Persia was, as is now generally believed, the original seat of the people of whom that tongue was the vernacular speech.

It deserves notice that the Turks—the nearest neighbours of the Persians to the north—have not adopted the Sanskrit numerals, but, on the contrary, have a system peculiar to themselves. This would seem to be a case exactly parallel with that which has excluded the Sanskrit numerals from the Dravidian languages of the south of India and from the Tilutian to the north of it.

The Arabs have a numeral system which reaches no further than one thousand. The terms are substantially, although not literally the same as those of the Hebrews ; and as the Arabs are not known to have made early foreign conquests, and were probably in civilization below the people of Palestine, it seems probable that they borrowed their numerals from the latter, just as they did in early times their week of seven days, taking the names of the days from the first seven numerals, and as, in more recent times, they borrowed from them the more rational points of their new religion. But the same numerals exist in the Babylonian—a fact which I owe to the learning and favour of my friend Sir Henry Rawlinson; and it may be, indeed, that both Jews and Arabs received them from the Assyrians—a people of a far more ancient civilization and power than either of them.

The Arabian numeral terms, it may be remarked, have not been adopted by any of the many tribes and nations who have adopted the religion of Mahomed, and who have not adopted, at the same time, the Arabic language in substitution of their native tongues. The cause is obvious; the earliest of the conversions to Mahomedanism date as late as the seventh century, and at this time the converted nations were already in possession of their native systems of numeration.

I come finally to the numerals of the nations of Europe. The Greek numerals are essentially the same as the Sanskrit, but only up to ten; for the hundred, the thousand, and the myriad appear to be entirely native. From this it is to be inferred that either the Greeks were in a very rude state when these low numbers sufficed for their wants, or that the nations which spoke Sanskrit, or broken-down dialects of it, had themselves, at the time of inter-communication, no higher numbers to bestow. Both causes may have contributed. It is not, indeed, reasonable to believe that the rude nation of warriors which invaded and conquered a great portion of Upper India, leaving a dead language as the sole monument of its existence, should have, before their settlement in that region, been in possession of the extravagantly high numbers of the Sanskrit system. These, on the contrary, it is reasonable to believe, could only have been the invention of a highly-endowed priesthood that had much idle time for meditation.

The Latin numerals are essentially the same as the Greek, counting as far as one thousand, but not to ten thousand, or to myriads as the Greeks latterly counted—evidence that the Grecian numerals were adopted by the Latins at a comparatively early time. The settlement of Greek colonies in Italy, some of these in times of unascertained antiquity, was the means by which the Greek numerals were introduced into Italy, and the great corruption which the words have undergone, is proof that they were introduced not through the medium of letters, but by oral communication. What the native Latin numerals were before they were superseded by the Greek, there is, I believe, no evidence to show, but as the Greeks in Italy were not conquerors who could have enforced their own system, we may believe that the native numbers must have been rude and imperfect to admit of their being supplanted by a foreign system.

All the languages derived from the Latin have, of course, adopted the Latin numerals, always with more or less corruption, and each one having corruptions peculiar to itself, just as has happened with the Sanskrit numerals adopted by the vernacular Hindu languages, as well as with the Malayan system when received into the languages of rude unlettered tribes.

The numerals of the German or Teutonic languages are substantially the same as those of the Latin, Greek, and Sanskrit as far as the digits, but the terms for hundred and thousand are native and not borrowed. The restriction of the foreign terms to the digits would seem to imply that the system was introduced at an early and rude period of society on the side of the recipients. It was received neither with the higher numbers of the Latins and Greeks, nor with the still higher ones of the people, whoever they were, of whom the vernacular tongue was Sanskrit.

In what are called the Celtic languages, embracing on one side the Welsh and Armorican, and on the other the Irish and Gaelick (although the two tongues really differ as much from each other as two neighbouring African or American languages), the numeration extends to one thousand. Although there be great corruptions in the words, owing to irreconcilable difference in the phonetic character of the Latin and Celtic tongues, and the impossibility of representing Celtic sounds by an alphabet framed for a different language, I entertain no doubt but that the numerals of both languages have been adopted directly from the Latin ones in comparatively very modern times, superseding some crude native systems, probably not more advanced than African or American ones. Taking the Irish or Gaelick as an example, we have here evidence of a vicenary scale, but even in this case the term, although greatly corrupted, is still Latin.

While the system of numeration now referred to prevails among so many of the languages of Europe, there are others which have no vestige of it, such as the Hungarian, the Russian, and other Slavonian tongues, the language of the Laps, and in the very centre of Europe the Basque. These have each their own peculiar numerals, with every appearance of being indigenous.

The origin of the numeral system, which has so general a currency among the nations of ancient and modern Europe, is a curious and interesting question ; but it is obvious that it can be one only of mere speculation. The system extends from Bengal to Spain and Ireland, and appears in its most perfect form in a dead tongue, the Sanskrit, now considered to have been the language of a nation whose parent country we can only guess at, and of whose conquests and migrations we know nothing, beyond what we are to infer from the dissemination of their speech. It is reasonable to infer, therefore, that the system originated with this people, and this view is corroborated from our finding that it is generally corrupted in proportion as we recede, whether in an eastern or western direction, from the supposed seat of the people whose vernacular tongue was Sanskrit—that is, Central Asia, the same region that has supplied the invaders and conquerors of Hindustan within the period of authentic history.

The manner in which the numeral system of the ancient conquerors of India was spread among most, but not all, of the nations of that region itself, is obvious enough: it was effected by conquest and religious conversions. It was not admitted at all into the languages of Tartary, or of the nations lying between India and China, and but very partially for its higher numbers into the languages of the Malayan race. Yet all the nations speaking the languages in question had, in one form or other, adopted religions, having their origin with the Hindus.

The manner in which the same numeral system came to be so generally diffused among some of the principal nations of Europe, is an event buried in the darkness of antiquity, and on this subject, therefore, we are reduced to mere reasonable conjecture.

Persia was a country of far earlier civilization and power than any cotemporary one of Europe, and even within the period of authentic history it made conquests which extended to the shores of the Mediterranean, including Greek Colonies. It is not unreasonable to believe that it may have made much earlier ones, although there was no one to record them. The Persian numerals, although themselves much corrupted, are far nearer to the Sanskrit ones than those of any of the European languages. Thus, while in the European tongues they are limited to the digits, in the Persian they reach to one hundred. From the vantage ground of Asia Minor they might have been communicated to the Greeks, at the time in a state of barbarism, superseding some rude native system.

The Latin numerals are admitted on all hands to have been borrowed from those of the Greeks, and although the Italians were in a rude state when this adoption took place, they must, like all other people, have had a native system of some kind which the foreign one thus superseded. The Greek numerals, as already stated, were not introduced by conquerors, for the Greeks who settled in Italy were mere colonists who planted themselves among barbarians, their numerals finding their way into their languages as did other portions of the Greek language.

I cannot help thinking that the Latin numerals must have found their way into the Teutonic and Celtic languages, much in the same manner in which the Greek numerals were introduced into the Latin. In the Teutonic tongues they extend only to ten, while in the Celtic, that is, the Erse or Gaelick, and the Welsh or Armorican, they embrace generally the whole series up to one thousand; a fact which would seem to argue a much more recent introduction with the latter.

Even in the time of Cæsar, Roman numerals from "the Province" had reached the remotest parts of independent Gaul, and even parts of Germany, and it is not unreasonable to suppose that a rude and unlettered people may have received from a civilized one a convenient numeral system, supplanting their own imperfect one. Cæsar, after his victory over the Helvetians, found among the spoils of their camp, a muster roll, or rather a census return of the whole emigration, for it included women and children, written in Greek characters, which, of course, implied the presence of the Greek numerals. This is exactly the manner in which the people of the Philippines appear to have received the Malayan numerals in supersession of their own, of which there remain now but the mere wrecks.

The notion of the Sanskrit numerals having been introduced into Europe, through a direct migration and settlement of the ancient people who spoke the Sanskrit language, I hold to be a mere philological dream, undeserving the smallest consideration, since it implies an enterprise utterly impossible to rude men. The probability is, that the wide diffusion of the Sanskrit numerals was effected step by step in a long course of ages, sometimes by conquest, sometimes by settlement, and sometimes through religion and commercial intercommunication. The manner in which the Malayan numerals have been diffused among the languages of various races of man, over many differing tongues, and over an area of far greater extent than that of the Sanskrit numerals, is an example which may be quoted in illustration. Like the Sanskrit numerals, the Malayan have been corrupted in proportion as the languages receiving them have been distant from their probable source, Java and Sumatra; while, like Sanskrit numerals, they have in some cases been wholly rejected, and this, even by tribes of the same race with those in whose language they appear in their most complete form.

The result of the present inquiry may be briefly summed up. The state of the numerals is a test of the progress which a people has made in civilisation, but the quality of the race of man, and the presence or absence, the abundance or scarcity, of indispensable accessories to progress, must be taken into consideration in applying it. In Australia, where the race is a very inferior one, and nearly all the requisite accessories absent, the numerals extend only to two, as represented by the two hands. In America, where the race was far more highly endowed than in Australia, and generally the accessories better, the numeral scale, even with the least favourably situated people, extended to five, while with the most auspiciously so, it reached to a thousand, and, indeed, in one or two cases even rose to a million.

The Negros, the Caffres, and the Hottentots of Africa, all intellectually inferior races, although possessed of the accessories which have promoted the civilization of more highly endowed races, such as corn and cattle, generally counted no further than the fingers of one hand, and even this much often with difficulty, while they seldom went the length of counting the fingers of both hands. But, in the same continent, we find more highly qualified races in the Nubians and Abyssinians, who have numerals extending to a thousand, and the Egyptians who had them reaching to a million.

On the continent of Asia, where we have a greater diversity of races than in any other quarter of the globe, there exists a great diversity of numeral systems. Each language had, no doubt, originally, and even within the same race of man, its own peculiar numerals, as in Australia, in America, and in Africa. But, here, from peculiar early facilities for the promotion of civilization, some nations, having acquired predominence, have been enabled to disseminate their numerals through conquest and commixture over a very wide surface, a result of which we have hardly any examples in the other regions of the world. The spread of the Sanskrit numerals from as far east as Bengal, to as far west as Spain ; the diffusion of the Malayan numerals from Sumatra to within two thousand miles of the American continent in one direction, and from the same Sumatra to Madagascar in another ; that of the Mongol numerals from the Sea of Japan to the Caspian ; and that of the Turkish numerals from Badkh-shan to Constantinople, are the chief examples.

It is important to notice that the mere invention of very high numbers can be admissible as evidence of comparative civilization, only within the same race of man. The precocious Hindus and Chinese were in possession of them, or, perhaps, more correctly, their sacerdotal orders were so, for thousands of years before they were invented by Europeans, who had recourse to them only when a practical necessity arose for them, and this did not happen until so late a time as the beginning of the fourteenth century, when the Italians invented the term millione, or "the great thousand," for the square of one thousand, and, at long intervals, were imitated by the other nations of Europe, the Russians adopting it only in the beginning of the eighteenth century, under their grand reformer, Peter the Great.

The general conclusion, then, to which we must necessarily come is that each separate tribe invented its own numerals, as it did every other part of language. They are, therefore, still numerous, but must have been far more so in the earlier periods of man's existence, before the intermixture of nations had made one system common to many, and before the exinction of many languages to which they belonged.

Although the numerals be among the most recently invented portions of speech, such is their antiquity, that in no case can we trace their first invention, and, but in rare instances, even the etymology of the terms composing them. No tribe so savage has ever been found absolutely destitute of them, however rude and imperfect their form. Like the languages to which they belong, therefore, the numerals must be considered as evidence of the unfathomable depth of the antiquity of man, himself the last creation of Almighty power.

In order to avoid encumbering this paper with hard and strange words, which would be unintelligible in a rapid reading, I have thrown the numeral terms, in a tabular form, into an appendix, for the use of those who may be disposed to give them a more deliberate consideration, each table being accompanied by a few necessary explanations.

It only remains for me to acknowledge my obligations to the friends who have assisted me in drawing up this paper, and these are the Hon. Edward Twistleton, the accomplished Grecian, Sir Henry Rawlinson, and Mr. Edward Thomas, the eminent orientalist and numismatist.

APPENDIX.

Australian Numerals.

	Hunter's River.	*Morunde.*	*Yak-kumban.*	*Cape York.*	*K.George's Sound.*
1	Wakol	Meitar	Nichar	Netat	Kain
2	Buloara	Tangkul	Parkulu	Naes	Kojin
3	Ngoro	Tangkul-meitar	Parkul-nichar	Naes-netat	Täan
4	Waran	Tangkul-tangkul	Parkul-parkul	Naes-naes	Or
5	—	—	—	Naes-naes-netat	Pul
6	—	—	—	Naes-naes-naes	—
A few	—	—	—	—	Kain-kain
Many	Kawul-kauwul	—	—	—	Pul

These are examples of the rudest numerals of the lowest savages of which we have any knowledge. As might be expected, now and then, some of the terms correspond with those of neighbouring tribes; but generally they are as different as are all other parts of the many languages of tribes who yet are of the same race throughout the continent. The first and last series are the only ones that have distinct terms for the first four numerals. In the others, the number "three" is simply "three-one". With them, also, "four" is "two-two". In the fourth series, "five" is simply "two-two and one"; and "six", "two-two-two". In the last series, the term for "five" is the same as the adjective "many", while "few" is expressed by "one-one".

American Numerals.

Numerals in Quichua,

The language of the Incas of Peru.

1	Huc
2	Yzcay
3	Quimza
4	Ttahua
5	Pishca
6	Zocta
7	Canchiz
8	Pussac
9	Yzcun
10	Chunca
100	Pachac
1,000	Huaranca
1,000,000	Hunu

Numerals in Aymara,

The language of the Indians of N. Bolivia; and the shores of Lake Titicaca.

1	Maia
2	Paia
3	Quimza
4	Pusi
5	Pisca
6	Zocta
7	Pakallo
8	Quimzakalko
9	Ya-tunka
10	Tunka
100	Pataka
1,000	Tunka-pataka

Numerals in Chibcha,

The language of the Muysca Indians of Bogota, in New Granada.

1	Ata
2	Bosa
3	Mica
4	Muyhica
5	Hisca
6	Taa
7	Qhupca
8	Sahuza
9	Aca
10	Ubchihica
100	Gue-hisca

Numerals in Tsoneca,

The language of the Patagonians.

1	Choche
2	Wame
3	Cāash
4	Cāge
5	Ctsenon
6	Winecash
7	Caōc
8	Winecāge
9	Kamekctsen
10	Cācen, *or* genokctsen
100	Patac
1,000	Waranc

African Negro Numerals—Western Side.

	Iuta.	*Bambarra.*	*Malowa.*	*Bornou.*	*Begharmi.*
1	Koko	Killi	Daïa	Telo	Keddi
2	Angöe	Fulla	Biyu	Inde	Sub
3	Apa	Sabba	Oku	Yasko	Mattah
4	Anna	Nani	Odu	Dago	Soh
5	Annu	Lura	Biya	Oünqu	Mi
6	Api	Wora	Siddut	Aruska	Mika
7	Apunnu	Worrula	Bekai	Tulur	Chilli
8	Adubrïa	Sagi	Tèküas	Wasku	Marta
9	Digrakuno	Konunto	Tarra	Leskar	Daso
10	Kundu	Ta	Gwerna	Meaqu	Dokemi
100	—	—	—	Mëa	Arrou
1,000	—	—	—	—	Dubu

The three first named series of these numerals are those of coast tribes, and differ wholly from each other. The terms would seem not to extend beyond ten. The two last series belong to languages of the interior, one of them having numerals reaching to a hundred, and the other even to a thousand; and this corresponds with the superiority of their social condition over that of the coast tribes.

South African and East African Numerals.

	Kafir.	*Hottentot.*	*Galla.*	*Shangala.*	*Briqua.*
1	Inyé	Kueé	Toko	Matama	Omchela
2	Zimbiné	Kam	Lumma	Ambanda	Raili, or Mabesi
3	Zintataté	Gona	Seddé	Kwokaga	Taru
4	Zinné	Kaka	Afur	Säacha	Inni
5	Zinkané	Gosé	Shun	Mankus	Churöi
6	Zintantat	—	Ja	Wata	Kataru
7	Zinnené	—	Turbah	Linojeta	Lishùi
8	Zintoamnayené	—	Seddet	Sugüata	Lüanileü-eni-maberi
9	Tuamnumyé	—	Sugul	Sasa	Lüanileü-nunaketa
10	Lishung	—	Kundun	Chika	Lumi

We have here the numerals of three distinct races of man. All differ widely from each other. None of them count beyond ten; and the Hottentots only to five.

Nubian Numerals.

	Somauli.	*Hurrur.*	*Danakil.*	*Arkiko.*	*Shibuo.*
1	Kou	Ahad	Inniké	Anté	Innek
2	Lebbá	Köut	Lummeh	Killi	Lammas
3	Suddé	Shiste	Suddeo	Selas	Adda
4	Afur	Harrut	Tené	Ubah	Afur
5	Shan	Hamist	Konnoyou	Amus	Hon
6	Leh	Sedist	Leheyé	Sus	Leh
7	Tdubba	Sate	Melhene	Subhu	Melhen
8	Sedeid	Suteg	Bahara	Theman	Bahr
9	Suggal	Zeitan	Segala	Tse	Sugal
10	Tubban	Asir	Thubban	Asur	Tummun
100	Bogal	Bukala	Bol	Mate	Bol
1,000	Kun	Kum	Thubban-a-bol	Alf	Alf

In the first and third series of these numerals, the terms seem to be entirely native, and are different in each. In the second series, the terms for "one" and for "ten" are obviously Semitic. In the fourth and fifth series, we find Semitic terms mixed with native ones, but apparently much corrupted.

Chinese Numerals, etc.

	Chinese.	*Japanese.*	*Kurile Isles.*	*Kamtschatka.*	*OedhOstiak.*
1	Yih	Fitote	Sinezb-synn	Syhnâp	Chusem
2	Ir	Ftats'	Zuzb	Dupk	Ynem
3	San	Mils'	—	—	Dagom
4	Se	Yots'	—	—	Syjem
5	Ngu	Itsuts'	—	—	Chojem
6	Liyeu	Muts'	—	—	Ajem
7	Ts'hi	Nanats'	—	—	—
8	Rah	Vats'	—	—	—
9	Kyeu	Kokonots'	—	—	—
10	Shib	To-wo	Fambe	Upyhs	Chojum
100	Ruh	Hiäk'	—	—	Ky
1,000	Ts'hyon	Shen			
10,000	Wan	—			
100,000	—	Jeu-man			
1 million	E'e	—			
10 millions	Chao	—			
100 millions	King	—			
1,000 millions	Kyai	—			

We have here the numerals of one monosyllabic language, and of four polysyllabic ones, all wholly differing in their terms from each other. The Japanese, who to a considerable extent have borrowed letters and religion from the Chinese, have entirely rejected their numerals. The rude people of the Kurile Islands and Kamtschatka have a very imperfect system, a combination of the binal and denary scales. Their simple terms are restricted to one, two, and ten; while intermediate terms consist of combinations of these with some euphonic changes, either by adding to, or deducting from, the elementary ones, as two and one for three, and two from ten for eight. The numerals of the Oedh-Ostiaks, a Siberian tribe, are an advance on these, for the early numbers go as far as six. Even this last number may be expressed by the combination of five and one, as well as by the simple term. The Ostiak numerals extend to a thousand, whereas those of Kamtschatka and the Kurile Islands reach no further than ten. A similar mode of numeration with that of Kamtschatka and the Kurile Islands, it will be observed, exists in two of the languages of the Malay Archipelago, which, like them, have rejected the general Malayan system.

HINDU-CHINESE NUMERALS.

	Arracan.	*Pegu.*	*Burmese.*	*Karen.*	*Kyen.*
1	Taik	Müe	Tit	Ta	That
2	Nhaik	Ba	N'hit	Ki	N'hi
3	Thong	Pai	Thon	The	T'hong
4	Le	Pol	Le	Lui	L'hi
5	Na	Pa-sun	Nga	Ye	N'hau
6	Khrauk	Ka-rao	K'hyauk	Ku	S'houk
7	K'hu nhaik	Ka-bok	K'hwo-nhit	Nui	Shi
8	S'hit	Ka-cham	S'hit	Kho	S'hat
9	Ko	Ka-chit	Ko	Kui	Ko
10	Se	Choh	Se	Si	Ha
100	Ra	Klom	Ya	Reya	Rya
1,000	Taung	Ngin	Taung	Gato	Toung
10,000	Thaung	Lak	Thaung	Gala	S'houng
100,000	Thing	Ket	Thing	Gathi	S'hìn

With these five classes of numerals commences the long series of those of the monosyllabic languages. With the exception of the first two numerals, the Arracan and Burmese seem to be essentially the same. The difference in these two would seem to indicate the existence of a binary scale, superseded by the denary, probably imposed by the more powerful nation, the Burmese, on the weaker, the Arracanese. The Pegu numerals are wholly different from both, although the people using them border both on the Arracanese and Burmese. The two last numbers in the Pegu numerals are Sanskrit, the same mistake in denomination being made as by the Malays. The native numerals of the Burmese, although I have not thought it necessary to give them, extend to ten millions. The Karen and the Kyen numerals are those of two unlettered tribes residing generally in the mountain or other wild tracts, remote from the more civilized people. Their numerals, it will be seen, completely differ from each other, as well as from those of the three more advanced nations. Their extending up to 100,000 shows the people, although unlettered and without any systematic religion (for they have not adopted that of Buddha, like the more polished nations), what is actually the case, that they have made considerable advances in the arts useful to life, as in agriculture, and the manufacture of iron and textile fabrics.

HINDU-CHINESE NUMERALS—*continued.*

	Siamese.	*Kambaja.*	*Ka.*	*Chong.*	*Anam.*
1	Nung	Moe	Moe	Moe	Mot
2	Song	Pir	Bar	Bar	Hai
3	Sam	Bai	Peh	Peh	Ba
4	Si	Bwan	Pwan	Pon	Bon
5	Ha	Pram	Chang	Pram	Nam
6	Kok	Pram-mae	Trao	Dong	Sau
7	Chet	Pram-pir	Pah	Nul	Bai
8	Ret	Pram-bai	Tam	Ti	Tam
9	Kao	Pram-bwan	Chin	Sar	Chin
10	Sib	Dap	Chit	Rai	Mu-ai
100	Roi	Roa	Dam	Chus	Tram
1,000	Ran	Pan	Halik	Ban	Ngan
10,000	Men	Mwan	Rin	Muwan	Muon
100,000	Sen	Kot	Tam-bing	San	
1 million	Kod	Sen			
10 millions	Lan				

The two first columns give the numerals of two languages written in a phonetic alphabet. Both languages have, as will be seen, very high numeral terms, which are native, and not, as with the Malayan nations, borrowed from the Sanskrit. The third and fourth columns give the numerals of two unlettered tribes living among the Kambojais, as the Karens and Kyens do among the Burmese and Peguans. Their numerals are generally taken from the civilized Kambojans. The last column contains the numerals of the Cochin-Chinese and Tonquinese language, or Anam written in the symbolic characters of China, and they are quite peculiar.

HINDU NUMERALS.

	Sanskrit.	*Pali.*	*Hindu.*	*Bengali.*	*Tamil.*
1	Eka	Eko	Ek	Ek	Ovu
2	Dwi	Twi	Do	Dui	Srru
3	Tri	Trini	Tin	Tin	Munu
4	Chatur	Chatu	Chár	Chári	Nalu
5	Pancham	Pancha	Pánch	Páach	Aindu
6	Shash	Cha	Chhah	Chhay	Aru
7	Saptam	Sata	Sát	Sát	Yeylu
8	Ashtam	Ata	Ath	At	Yettu
9	Navam	Nowa	Nao	Nay	Onbundu
10	Dasam	Tatsa	Das	Das	Puttu
100	Satam	Sata	Sau	Sat	
1000	Sahasram	Sahatsa	Hazar (Per.)	Sahasra	Ayirrum
10,000	Ayutam	Yuta			
100,000	Laksham	Laksa	Lakh		
Million	Niyutam	Niyuta	Niyut		
10 millions	Koti	Kâti	Karor		
Billion	Sarvvah				

The first column of this statement is the original Sanskrit, and the second, its reputed immediate descendant, the Pali, as it exists in the sacred writings of the present worshippers of Buddha. As a living tongue the Pali is as obsolete as the Sanskrit itself. The third and fourth columns contain the numerals of two of the most widely spoken languages of India, evidently derived either from the Sanskrit or Pali. The fifth column exhibits the numerals of a people truly Hindu in race, and at present numbering 14,000,000, which have no more relation to Sanskrit, than have Basque or Japanese.

NUMERALS OF CENTRAL ASIA.

	Sanskrit.	*Persian.*	*Tibitian.*	*Mongol.*	*Turkish.*
1	Eka	Ek	Cheik	Nigre.	Bir
2	Dwi	Do	Gnea	Goyer	Iki
3	Tri	Sah	Sum	Churban	Eutch
4	Chatur	Char	Zea	Dürban	Dort
5	Pancham	Părig	Gna	Taban	Besh
6	Shash	Shash	Tru	Jiron	Alti
7	Saptam	Hăft	Tun	Dohlon	Yedi
8	Ashtam	Hăst	Ghe	Naiman	Sekiz
9	Navam	Nah	Gu	Yisun	Dokuz
10	Dasam	Dah	Chutamba	Arban	On
100	Sâtam	Săd	—	Jan	Yuz
1000	Sahasram	Hăzar	—	—	Bin
10,000	Ayutam				
100,000	Laksham				
Million	Niyutam	—	—	—	Million
10 millions	Koti				
Billion	Sârvvah				

For facility of comparison, I have repeated the Sanskrit numerals in the first column. The Persian numerals in the second, are obviously derived from them up to one hundred, while the term for one thousand is native, containing even a letter, the Z, unknown to the Sanskrit alphabet. The third and fourth columns contain the numerals of two people who although they have had their religion from India, have not adopted the Sanskrit numerals. The Turkish numerals, in the fifth column, have borrowed nothing from the Sanskrit, although the Persians, the neighbours of the Turks, have taken nearly all theirs from it.

MALAYAN NUMERALS.

	Malay.	*Javanese.*	*Kawi.*	*Maori.*	*Madagascar.*
1	Sa, sæwatu	Sa, sawiji	Eka	Tahi	Trai
2	Duwa	Loro, roro	Dwa	Rüa	Rüa
3	Tiga	Tâlu	Tri	Toru	Telu
4	Ampat	Papat	Chator	Wa	Efatra
5	Lima	Lima	Pancha	Rima	Dimi
6	Anâm	Nânâm	Sad	Omo	Enima
7	Tujuh	Pitu	Sapta	Wetu	Fitu
8	Dâlapan	Wolu	Asta	Woru	Volu
9	Sâmbilan	Sanga	Nawa	Twa	Sivi
10	Puluh	Puluh	Dasa	Tekau	Tulu
100	Ratus	Atus	Sata	Räe	Zatu
1000	Ribu	Ewu	Sasra	Mano	Arivu
10,000	Laksa	Laksa	Laksa	—	Alina
100,000	—	Kăti	Kâti	—	Ketsi
Million	—	Yuta	Yuta		
10 millions	—	Wandra	Wândra		
Billion	—	—	Wurda		

The two first columns exhibit the Malay and the Javanese numerals, to one or other of which may be traced all the wide-spread Malayan system of numeration. The fourth and fifth columns, embracing the numerals of New Zealand and Madagascar show the greatest extension of the general system south and west. We here find the same system prevailing over three distinct classes of languages spoken by as many distinct races of man, namely the Malay, the Polynesian, and the Oceanic negro. The third column gives the numerals of the recondite language of Java, transmitted, not orally, but by writing, and consequently as perfectly as the written character of the Javanese people, and their pronunciation would admit.

MALAY AND PHILIPPINE NUMERALS.

	Tambora.	*Ternati.*	*Nicobar.*	*Tagala.*	*Bisaya.*
1	Sëena	Rimoi	Hean	Isa	Isa, isara
2	Kaläe	Rimo-didi	Häa	Dulava	Duha
3	Nih	Rïangi	Löe	Tatlu, itlu	Tulu
4	Kude-in	Raha	Töan	Apat	Upat
5	Kutel-in	Roma-toha	Tani	Lima	Lima
6	Bata-in	Rara	Tafoul	Anim	Anum, unum
7	Kumba	Tomdi	Ifat	Ritu	Ritu
8	Koneho	Tofkangi	Enföan	Valu	Valu
9	Lali	Siyn	Enkata	Siyam	Sïam
10	Sarone	Yagi	Sikom	Rulu	Ruluh
100	Mari	Ratu	—	Düan	Gatus
1000	—	Ribu	—	Libu	Livu
10,000	—	—	—	Laksa	Laksa
100,000	—	—	—	Yuta	Yuta

The three first columns are examples of remarkable exceptions to the wide prevalence of the Malayan numeral system; and the two last show the corruptions which it has undergone in its transfer to languages of a different phonetic character from those with which we suppose it to have originated.

ORIENTAL NEGRO NUMERALS.

	Sâmang.	*Gebe.*	*Waigyu.*	*New Guinea.*	*Tanna.*
1	Nai	Sa	Sai	Oser	Riti
2	Be	Lu	Seru, Düi	Suvu	Karut
3	Tiga	Tul	Kior	Kïor	Kakar
4	Ampat	Fat	Fïak	Fïak	Kafa
5	Lima	Lim	Rim	Rim	Krirum
6	Anâm	Unum	Onem	Unem	Krirum-riti
7	Tujuh	Fit	Fik	Fek	Krirum-karut
8	Dâlapan	Wal	War	Uar	Krirum-kahar
9	Sâmbilan	Sïu	Sïu	Sïu	Krirum-krafa
10	Ruluh	Deha	Samfur	Samfun	Krirum-krishm
100	Ratus	Utin	Utin	—	
1000	—	Salan	—	—	

These numerals are, for the most part, those of the general Malayan system, but greatly corrupted, as was to be looked for, from people of a different race and different phonetic characters of speech from those to whom we must ascribe their origin—the Malayan. In several of them, the two first numerals seem to be native words, implying the existence of a previous binal scale. This is obvious with the numerals of the first column, which are those of the pigmy negros of the Malay peninsula, all of which, the two first numbers excepted, are those of the neighbouring Malays. Where the sounds are analogous in the Malay and Negro languages, there is but little corruption in the latter, as with the numbers five and six. The letter P seems unknown to the negro tongues, and the labial F, equally unknown to the Malay languages, is substituted for it. Generally the Negro numerals are taken more from their form in the Javanese than in the Malay, as in the numbers seven and eight. The terms for ten and for one hundred are in no instance Malayan, except in the first column, which leads to the belief that the Negro tribes had imperfect decimal scales before the invasion of the Malayan terms—probably similar to some rude numerals, already mentioned, in which the terms for intermediate numbers are formed, either by addition to the lower, or subtraction from the higher. Some of the Negro languages, however, and that of Tanna, in the last column, is an example, count in native terms as far as ten. The actual terms extend in this case only to five, the denominations up to nine, being formed by a combination of the five with the denominations below it, as five and one are six; while ten consists of a reduplication of five. This shows that even the Oceanic Negros, who have not adopted the Malayan nomenclature, are in advance of the Australians, and it is corroborated by the fact that they are in possession of the domestic dog and hog, and cultivate the yam and the cocoanut.

SEMITIC NUMERALS.

	Arabic.	*Hebrew.*	*Babylonian.*	*Amharric.*	*Tigré.*
1	Ahad	Achad	—	And	Addé
2	Asnin	Shenayen	Sunan	Kileté	Kileté
3	Sălăt	Shelasho	Salas	Sost	Seleste
4	Arăba	Arbanga	Arbá	Arut	Erbate
5	Khămis	Chamesha.	Khamis	Aumist	Aumishté
6	Săt	Shesha	Sedá	Sedist	Sedishté
7	Săba	Shevya	Shebé	Subhat	Shubaté
8	Sămamăt	Shemona	Saman	Semint	Shumurité
9	Tăsa	Teshga	Tesé	Zetti	Tishate
10	Ashăr	Vyavhar	Esher	Aser	Asurté
100	Mayăt	Miyah	Me	Meo	Mete
1000	Asăf	Alaf	—	She	She
10,000	—	—	—	Alf	Elf
Million	—	—	—	Ilef	

These five numeral systems, although two of them be geographically African, are plainly enough substantially the same; but with which people they originated it is difficult to say. They are, however, so corrupted in the two Abyssinian languages, that we may safely pronounce against them. It will lie between the Hebrew and Assyrian, the languages of two nations whose civilization long preceded that of the Arabs, a people whose advancement is of modern and historical date. In the Assyrian or Babylonian the terms for "one" and "one thousand" have not been ascertained.

EUROPEAN NUMERALS.

	Sanskrit.	*Greek.*	*Latin.*	*Italian.*	*Biscayan.*
1	Eka	Eis, En	Unus	Uno	Bat
2	Dwi	Duo	Duo	Due	Bi
3	Tri	Treis, tria	Tres	Tre	Hiru
4	Chatur	Tessares	Quatuor	Quattro	Lau
5	Pancham	Pente	Quinque	Cinque	Bost
6	Shash	Hex	Sex	Sei	Sei
7	Saptam	Hepta	Septem	Sette	Zaspa
8	Ashtam	Okto	Octo	Otto	Zodzi
9	Navam	Ennea	Novem	Novo	Bederatzi
10	Dasam	Deka	Decem	Diece	Amar
100	Satam	Hekaton	Centum	Cento	Eun
1000	Sahasram	Chilioi	Mille	Mille	Milla
10,000	Ayutam	Murioi	—	Millione	
100,000	Laksham				
Million	Niyutam	—	—	Billione	
10 millions	Koti				
Billion	Sarvvah				

The Sanskrit numerals are for convenience again repeated in this tabular statement. The Greek are evidently derived from them directly or indirectly—probably the latter. The Latin are admitted to be derivatives of the Greek, and, of course, the Italian of the Latin. But the numerals of the fifth column, take nothing at all from the Sanskrit, and from the Latin only the term for thousand.

EUROPEAN NUMERALS—*continued.*

	Sanskrit.	*German.*	*Erse.*	*Hungarian.*	*Lap.*
1	Eka	Ein	Aon	Ed	Auft
2	Divi	Zwei	Da	Ketta	Gouft
3	Tri	Drei	Tri	Harom	Golm
4	Chatur	Vier	Cather	Ned	Nielja
5	Pancham	Funf	Coig	Ut	Vit
6	Shash	Sechs	Se	Hat	Jut
7	Saptam	Sieben	Seach	Het	Epiushia
8	Ashtam	Acht	Ocha	Nolz	Kantse
9	Navam	Neun	Nueve	Kalenz	Antse
10	Dasam	Zehen	Deich	Tis	Lage
100	Sâtam	Hundert	Ciad	Sas	
1000	Sâhasram	Tausend	Mil	Ezar	
10,000	Ayutam				
100,000	Laksham				
Million	Niyutam	Million	—	Millio	
10 millions	Koti				
Billion	Sârvvah	Billion			

The numerals of the second column of this statement, the German, are an example of all of those of the Teutonic nations. Up to ten only they are of Sanskrit origin, introduced, it may be conjectured, through the medium of the Latin. They are far more corrupted than in the Latin or Greek, and differ more widely than they do in these from the Sanskrit, implying, perhaps, their adoption when the Teutonic people were still rude and illiterate. The Erse of the third column approaches much nearer to the Latin than the German, while the numbers, instead of being confined to the digits, extend to a thousand. The Welsh numerals, I may add, afford, equally with the Erse or Gaelic, evidence of a modern adoption. Like it, the terms extend to one thousand. There seems, however, to be a wider deviation from the Latin in some of its terms, and one of them, that for five, Pump, appears as if taken from the neuter from the Greek numeral, Pempe. The Hungarian or Magyar and Lap are given as examples of European numerals that are in no way, directly or indirectly, traceable to the Sanskrit. In the Hungarian, the term for thousand is probably taken from the Persian *hazar*, and that for million is evidently from modern Italian

MR. JOHNSON said he was surprised to have heard it stated that the Zooloo Caffres had no terms to express numeration beyond three. While residing at the Cape, he had made excursions to the south, and had often seen seven hundred or eight hundred head of cattle placed in charge of Zooloo chiefs. How is it possible these men could account for the herds, if they could not count? Moreover, it was common among them, when they saw an Englishment with spectacles, to call him "four-eyed." The argument for the distinctive capacities of various tribes to invent or acquire numerals was one that was much against the doctrine of the unity of mankind, and almost went to stamp some races as separate species. In rude society, however, very few words were ordinarily in use, and in our language we had made a great advance in the progress of civilisation, and felt new and numerous wants for terms of expression. Although we had now more than twenty thousand words, in the time of Shakespeare three hundred sufficed to express all that was commonly required. He considered, therefore, that it was the absence of the want for higher terms that was the cause of their absence.

MR. AYLIFFE, from the Cape of Good Hope, confirmed the statement of the existence of numerals in the language of the Caffres of the south-east of Cape Colony. They counted first to ten ; then ten and one, and so on, twenty and one, etc., up to one hundred, for which they used a native term signifying " something great" ; from that they went to a thousand.

MR. F. GALTON said it did not surprise him that the Caffres should have the means of counting up to a hundred. Men who had large flocks had a necessity for it ; but amongst the aboriginal tribes whom he had visited, such necessity did not occur, for their flocks were much smaller. These never showed any great accomplishments. Really, in rude life, people have no object in numbers. Nouns of multitude take the place of numerals. Just as a sportsman speaks of a covey or a pack, so each of their terms express comparative numbers. When we speak of numerals as evidences of civilisation, What do we mean ? One definition of civilisation might be the aptitude for forming a new state of society ; another, the high development of intelligence. Now savages were very often large-hearted and intelligent men, and yet were incapable of counting. On the other hand, to take the labourers of our own country, how many of them could not count ? Of what value, then, were numerals as an evidence of civilisation ?

SIR ERSKINE PERRY commented on the notion of the origin of European languages from the Sanskrit. That there was a similarity between the English and Latin or English and French or German did not necessarily show that one had adopted from the other, it might show some common origin to which a clue might be obtained. The same might be the case with numerals as with languages.

MR. MEEKINS said, that as the President had stated that the bases of numbers in Australia was binary, and in this country decimal, he wished to ask him if he had ever met with a duodecimal system ? There were many advocates for such a system.

The PRESIDENT said the binal was in one sense a duodecimal. The natural system was the decimal. It might have been a duodecimal, if man had been born with six fingers instead of five.